

***XYRIS ISOETIFOLIA* KRAL (XYRIDACEAE) NEW TO ALABAMA AND ITS
RANGE AND HABITATS IN FLORIDA**

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ABSTRACT

Xyris isoetifolia Kral was previously thought to be a narrow endemic of the Florida panhandle and was represented by collections from six stations. It is here reported as new to Alabama, from the sandy margin of a sinkhole pond in Covington County. The habitats of five newly discovered Florida panhandle stations are discussed and related to the Alabama station.

KEY WORDS: *Xyris isoetifolia*, Xyridaceae, Alabama, limesink ponds

Xyris isoetifolia Kral was described in 1966 from northwest Florida as occurring in Bay and Gulf counties (Kral 1966) and has been reported as endemic to Florida (Muller *et al.* 1989; Anderson 1989). Kral (1966; 1983) described the habitat for *X. isoetifolia* as moist sands or sandy peats of savanna bogs, flatwoods pond margins, and shores of limesink ponds and lakes. Anderson (1989) reported that the Gulf County record (Kral 1966; Clewell 1985) was in error, and that the only other record for *X. isoetifolia* was actually from Washington County. There is a Washington County specimen at VDB, "Sandy shore of Chain Lakes, W of Greenwood," *Godfrey & Henderson 62954*, 6 July 1963; which is also cited in Kral's unpublished list of exsiccatae for his 1966

Xyris monograph. Anderson made additional collections from either side of an unimproved timber access road that straddles the Gulf and Bay county line. Anderson (1989, p. 501) erroneously reported his collections #11,713 and #11,776 as a county record for Gulf County, since the labels indicate that these numbers are actually from Bay County. However, Anderson did collect *X. isoetifolia* in Gulf County, but the collections are numbered 11,712 and 11,775, based upon our examination of specimens at the FSU herbarium. In summary, *X. isoetifolia* had previously been known from six collections at four Bay County stations (Kral 15651 [holotype], Kral 23193, Godfrey & Houk 61551, Godfrey & Kral 62425, Anderson 11713, Anderson 11776), one Washington County station, and two collections from a single station in Gulf County (Anderson 11712 and 11775). Our collections have added five new stations for Florida; four in Bay County (Orzell & Bridges 14218, 15240, 17107, and 18278) and one in Washington County (Orzell & Bridges 9784).

Our Florida collections are from three distinct community types: seepage herb bogs or seepage savannas (Bay and Gulf counties), coastal scrubby flatwoods (Bay County), and margins of sandy limesink ponds (Washington County). The Bay and Gulf county seepage habitats are dominated by *Pleea tenuifolia* Michx. In these areas *Xyris isoetifolia* grows in association with *Bigelovia nudata* (Michx.) DC., *Burmanniea capitata* (Walt.) Mart., *Cliftonia monophylla* (Lam.) Britt. ex Sarg., *Dichantheium dichotomum* (L.) Gould, *Drosera capillaris* Poir., *Drosera tracyi* MacFarlane, *Erigeron vernus* (L.) Torrey & Gray, *Eriocaulon compressum* Lam., *Eriocaulon decangulare* L., *Fuirena breviseta* (Coville) Coville in Harper, *Gaylussacia mosieri* Small, *Hypericum brachyphyllum* (Spach) Steud., *Lachnanthes caroliniana* (Lam.) Dandy, *Lachnocaulon anceps* (Walt.) Morong, *Lachnocaulon digynum* Körn., *Lachnocaulon minus* (Chapman) Small, *Linum medium* (Planch.) Britt. var. *texanum* (Planch.) Fern., *Lophiola aurea* Ker-Gawl., *Lycopodium alopecuroides* L., *Lycopodium prostratum* Harper, *Panicum rigidulum* Bosc ex Nees, *Physostegia godfreyi* Cantino, *Pinguicula lutea* Walt., *Polygala lutea* L., *Rhexia alifanus* Walt., *Rhexia lutea* Walt., *Rhynchospora baldwinii* A. Gray, *Rhynchospora chapmanii* M.A. Curtis, *Rhynchospora curtissii* Britt. ex Small, *Rhynchospora filifolia* A. Gray, *Rhynchospora oligantha* A. Gray, *Rhynchospora plumosa* Ell., *Sarracenia flava* L., *Sarracenia psittacina* Michx., *Scleria reticularis* Michx., *Smilax laurifolia* L., *Syngonanthus flavidulus* (Michx.) Ruhl., *Tofieldia racemosa* (Walt.) B.S.P., and *Xyris ambigua* Beyr. ex Kunth.

Within less than one mile of the Gulf of Mexico and its embayments in coastal Bay County, *Xyris isoetifolia* can be locally abundant along disturbed sandy road embankments through scrubby flatwoods. Scrubby flatwoods occur where a relatively deep sandy surface overlies an impervious spodic layer, resulting in alternating conditions of subsurface saturation and drought. These flatwoods typically have a pine canopy with a dense tall shrub layer primarily of evergreen scrub oaks and ericaceous shrubs. Closely associated plants in these

habitats include *Xyris brevifolia* Michx., *X. elliottii* Chapm., and *Lachnocaulon anceps*. Other associates recorded at scrubby flatwoods in coastal Bay County include: *Asclepias cinerea* Walt., *Carphephorus odoratissimus* (J.F. Gmel.) Hebert, *Conradina canescens* (Torrey & Gray) A. Gray, *Euphorbia telephioides* Chapman, *Hypericum tetrapetalum* Lam., *Ilex glabra* (L.) A. Gray, *Kalmia hirsuta* Walt., *Liatris tenuifolia* Nutt., *Lyonia ferruginea* (Walt.) Nutt., *Lyonia lucida* (Lam.) K. Koch, *Pinus palustris* P. Mill., *Polygonella gracilis* (Nutt.) Meisn., *Quercus minima* (Sarg.) Small, *Rhynchospora plumosa*, *Smilax auriculata* Walt., *Cyrilla racemiflora* L., and *Gratiola subulata* Baldw. Where seepage emerged on a road embankment through scrubby flatwoods in coastal Bay County, the following associates were recorded: *Anthaenantia rufa* (Ell.) Schultes, *Bigelovia nudata*, *Burmanna capitata*, *Carphephorus pseudoliatris* Cass., *Drosera capillaris*, *D. tracyi*, *Erigeron vernus*, *Hypericum brachyphyllum*, *Juncus scirpoides* Lam., *Lachnocaulon anceps*, *Lobelia puberula* Michx., *Lycopodium carolinianum* L., *Pilea tenuifolia*, *Polygala cruciata* L., *Polygala lutea*, *Rhexia alifanus*, *Rhexia lutea*, *Rhexia mariana* L., *Rhynchospora chapmanii*, *Rhynchospora oligantha*, *Rhynchospora plumosa*, *Sarracenia flava*, *Scleria reticularis*, *Syngonanthus flavidulus*, *Utricularia juncea* Vahl, and *Xyris elliottii*.

At our Washington County site *Xyris isoetifolia* grows on the upper margin of a relatively steep sided sinkhole lake, where seepage emerging from a nearby steephead stream saturates the exposed sandy lakeshore. Both the seasonal and long term fluctuating water levels of this sinkhole lake and others characteristic of the Greenhead Slope physiographic region, in Bay and Washington counties, keep the upper shoreline from being invaded by most woody plants, thereby producing an intermittently exposed sandy margin which varies in width according to the lake water level. During extended periods of low water conditions at this sinkhole lake, *X. isoetifolia* is abundant and grows in close association with *Amphicarpum muhlenbergianum* (Schultes) A.S. Hitchc. *Centella asiatica* (L.) Urban, *Drosera filiformis* Raf. (at one of its few stations south of North Carolina), *Fuirena scirpoidea* Michx., *Hypericum reducedum* P. Adams, *Lachnocaulon minus*, *Rhynchospora pleiantha* (Kukenth.) Gale *Sagittaria isoetiformis* J.G. Sm., *Syngonanthus flavidulus*, *Utricularia cornuta* Michx., *U. subulata* L., *Woodwardia areolata* (L.) T. Moore, *Xyris baldwiniana* Schultes, *X. drummondii* Malme, and *X. longisepala* Kral. *Clethra alnifolia* L. *Cliftonia monophylla*, and *Ilex glabra* form a scrubby zone at the mean seasonal high water level of the lake, just upslope from the *X. isoetifolia*. *Hypericum lissophloeus* P. Adams can occur as scattered shrubs in association with *X. isoetifolia*. During our visits to the site (Sept. 1989, Aug. 1991) when high lake water levels inundated the bare sandy margin, we did not observe any *X. isoetifolia*.

While conducting floristic studies on the Gulf Coastal Plain we collected *Xyris isoetifolia* in southern Alabama at a site about 120 km northwest of the

nearest known locality for it in Florida. The collection data for our Alabama specimens are as follows:

Xyris isoetifolia Kral (Xyridaceae). UNITED STATES. Alabama: Covington Co.: Sandy fluctuating shoreline of limesink pond on N shore of Blue Pond, at picnic area at end of FS Rd. to E of AL Hwy. 137 at a point 1.1 mi N of jct. with Covington Co. Rd. 24; Conecuh Wildlife Management Area in Conecuh National Forest; NWQ, NEQ, Sec. 28, T2N R15E, Wing 7.5' Quad.; 31° 06' 51" N, 86° 33' 11" W; Elev. 214-220 ft.; 12 May 1989, Orzell & Bridges 9820 (VDB,TEX,USF). Same locality, 11 Sept 1989, Orzell & Bridges 11711 (FSU,GA,MO,NCU,NY,VDB,TEX,WIS).

Xyris isoetifolia occurs on the upper sandy margin of a limesink pond just below the perennial graminoid dominated zone at the Alabama site. It grows in small tufts on moist, exposed sand in association with *X. longisepala*, *Lachnocaulon minus* and occasionally *X. jupicai* L.C. Rich. *Eupatorium leptophyllum* DC. and *Hypericum fasciculatum* Lam. occur in this zone as scattered individuals and partially shade *Xyris isoetifolia*.

The Blue Pond location has been the source of several new and interesting plant records for Alabama (Kral 1973; Kral 1976; McGinty 1983). Kral (1973; 1976) reported several plant taxa new to Alabama from Blue Pond, including *Eupatorium leptophyllum* (Kral 1976) and *Xyris longisepala* (Kral 1973) which are associates of *X. isoetifolia*. Kral (1973) also mentioned several other rare taxa for Alabama which occur at Blue Pond (*Rhexia salicifolia* Kral & Bostick, *Eriocaulon lineare* Small, *Lachnocaulon minus*, and *Sagittaria isoetiformis*). A search by the authors of nearby limesink ponds in the vicinity of Blue Pond has thus far failed to locate any additional populations of *X. isoetifolia*.

Based upon our field observations in Florida and Alabama, and the relative abundance of *Xyris isoetifolia* at these stations, it appears to be most frequent on the outer coastal terraces of Bay County, Florida. Within the Gulf Coastal Lowlands region of the Florida panhandle, it occurs in seepage herb bogs and seepage savannas in both Bay and Gulf counties and in scrubby flatwoods of coastal Bay County. It is also locally abundant further inland on seepage saturated exposed sandy margins of steep sided, seasonally fluctuating limesink ponds in Bay and Washington counties on the sandy upland of the Greenhead Slope. Here, *X. isoetifolia* is often found in association with a number of endemic vascular plants of these habitats. In southern Alabama it is apparently rare and presently known only from the sandy margin of a similar limesink pond in Covington County. *Xyris isoetifolia* occurs abundantly within microhabitats where there is some periodic seepage or capillary saturation of sand or sandy peat. It appears to be most abundant where either natural (i.e., fire, soil slumping) or artificial disturbance of the habitat (i.e., occasional soil disturbance due to roadside maintenance, clearcutting, etc.) has occurred in the

recent past. *Xyris isoetifolia* thrives where such disturbance reduces competition from the surrounding herbaceous vegetation. Within these microhabitats it can form small tufts, which under favorable conditions can form small areas of turf. Here it may be locally dominant, but it is unlikely to persist as a long term component in severely disturbed habitats once taller perennial vegetation becomes established. Additional localities for this infrequently collected *Xyris* should be sought in similar habitats elsewhere in the southeastern Coastal Plain.

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